Conversion Guide

hp StorageWorks 1000ux/1900ux/2300ux Optical Jukebox

First Edition (May 2004)

Part Number: AA994-96001

This guide describes procedures for converting an existing HP StorageWorks Jukebox from MO to UDO or mixed-media technology.

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Contents

About this Guide

This conversion guide provides information to help you:

- Converting an existing MO jukebox to UDO technology (making the unit UDO-ready)
- Retrofitting and reinstalling 14x MO drives for a mixed-media jukebox
- Increasing jukebox capacity

"About this Guide" topics include:

- Related documentation, page 6
- Conventions, page 7
- Getting help, page 8

Related documentation

In addition to this guide, HP provides corresponding information:

■ *HP StorageWorks 3800ux/7100ux Optical Jukebox Getting Started Poster*

■ *HP StorageWorks 3800ux/7100ux Optical Jukebox Setup Guide*

■ *HP StorageWorks 3800ux/7100ux Optical Jukebox User's Guide*

■ *HP StorageWorks 3800ux/7100ux Optical Jukebox Service Manual*

Conventions

Conventions consist of the following:

- Document conventions
- Text symbols

Document conventions

This document follows the conventions in Table 1.

Table 1: Document conventions

Convention	Element
Blue text: Figure 1	Cross-reference links
Bold	Menu items, buttons, and key, tab, and box names
Italics	Text emphasis and document titles in body text
`Monospace font`	User input, commands, code, file and directory names, and system responses (output and messages)
`Monospace, italic font`	Command-line and code variables
Blue underlined sans serif font text (http://www.hp.com)	Web site addresses

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.

Caution: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

Tip: Text in a tip provides additional help to readers by providing nonessential or optional techniques, procedures, or shortcuts.

Note: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: http://www.hp.com.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: http://www.hp.com/support/. From this web site, select the country of origin.

Note: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

■ Technical support registration number (if applicable)

■ Product serial numbers

■ Product model names and numbers

■ Applicable error messages

■ Operating system type and revision level

■ Detailed, specific questions

HP storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access the storage site at: http://www.hp.com/country/us/eng/prodserv/storage.html. From this web site, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

■ In the United States, call 1-800-345-1518

■ In Canada, call 1-800-263-5868

■ Elsewhere, see the HP web site for locations and telephone numbers: http://www.hp.com

Preparing for Conversion

1

Overview

This chapter explains what is needed to convert an existing jukebox into several configurations. The following topics are presented.

- Conversion options and kits, page 10
- Tools and firmware, page 12

Conversion options and kits

To convert a jukebox from a magneto optical (MO) system to an ultra-density optical (UDO) or mixed-media system, first make the existing MO jukebox UDO-ready. After this is complete, you can install new UDO drives in place of the MO drives, or in addition to retrofitted existing MO drives. The following sections describe the kit required for each option.

Converting an existing MO jukebox to UDO technology (making the unit UDO-ready)

Converting an existing MO jukebox to UDO technology involves converting the jukebox and installing twoUDO drives as described in Installing 2 UDO drives, page 35, and using Kit AA994A. Items included in the kit are listed in Table 2.5

Table 2: Contents of Kit AA994A

Part Description	Quantity	Part Number
Interposer board	1	AA965-67001
UDO drive	2	AA961-67001
UDO drive ACI cable	2 (1 per drive module)	AA966-63005
UDO LVD drive cable	2 (1 per drive module)	AA966-63007
SCSI jumper	2	AA966-63009
Buffer board	1	AA965-67002
LVD SCSI terminator	1	5183-2657
Interposer to buffer LVD 68-pin SCSI cable	1	AA966-63003
Interposer to controller 50-pin library SCSI cable	1	AA966-63004
Interposer to controller 50-pin GPIO cable	1	AA966-63002

Retrofitting and reinstalling 14x MO drives for a mixed-media jukebox

If you are retrofitting and reinstalling MO drives, do so after you have made the jukebox UDO-ready. Two existing 14x MO drives will be retrofitted and reinstalled using the instructions in Retrofitting and reinstalling MO drives, page 36. Use Kit AA995A.

Note: This procedure is done only after making the jukebox UDO-ready.

Items included in the kit are listed in Table 3.

Table 3: Contents of Kit AA995A

Part Description	Quantity	Part Number
Media detect station	1	AA968-04001
MO SCSI drive cable	1	AA966-63008
MO drive ACI cable	2	AA969-63006
LVD SCSI single-ended convertor	2	1200-1997

Note: Only 14x MO drives can be upgraded and included in a mixed-media jukebox. 2x, 4x, and 8x MO drives are not supported in a mixed-media configuration.

Increasing jukebox capacity

To increase jukebox capacity from 32 to 64 slots, new UDO drives must be installed, and a capacity module may be needed to allow the system to use the additional slots. Use Kit AA996A, the contents of which are presented in Table 4.

Table 4: Contents of Kit AA996A

Part Description	Quantity	Part Number
UDO drive	2	AA961-67001
UDO drive tray assembly	2	AA966-62004
Drive brackets assembly	2	AA996-63002
UDO drive ACI cable	2 (1 per drive)	AA966-63005
UDO LVD (SCSI drive to interposer) cable	2 (1 per drive)	AA966-63007
UDO drive power cable	2 (1 per drive)	C1163-61605
Configuration Module	1	C1170-60003

Note: If the customer already has a configuration module, the one from the kit is not needed. You may return it to your sales representative or discard it.

Tools and firmware

When upgrading or converting the library, connect your PC to the jukebox to perform the following two tasks:

■ Download firmware to the jukebox controller and drives.

■ Verify proper operation of the drives after conversion or firmware installation.

Specific tools and firmware are required.

Tools

■ Compatible host computer on which to run HP StorageWorks Library and Tape Tools (L&TT)

■ HP StorageWorks Library and Tape Tools, which can be downloaded from http://www.hp.com/support/tapetools

■ For laptops, Adaptec APA-1480/60 single-ended, high-density male cable with a high-byte terminated adapter (50-pin high-density female to 68-pin high density male)

■ T-10, T-15, and T-20 Torx drivers

Firmware

The first step in performing a conversion is to obtain the most current version of the jukebox controller and drive firmware for the model and option of the jukebox to which you are converting. Firmware can be downloaded from http://www.hp.com/go/support. Follow the menu choices to the firmware for this jukebox.

Converting an MO Jukebox to UDO or Mixed-Media

2

Technology

Overview

Converting an MO jukebox to UDO or mixed-media technology requires that the following procedures be performed.

- Upgrading the firmware
- Accessing inside the jukebox
- Removing the existing drives
- Removing the controller board
- Replacing the SCSI interface PCA with the new buffer board
- Removing the ribbon cables and the interposer board
- Installing the new ribbon cables
- Installing the new interposer board
- Replacing the controller board and cover
- Installing the drives

Upgrading the firmware

Before performing the hardware conversion, upgrade the firmware to the correct version for UDO-libraries.

Note: Use HP StorageWorks Library and Tape Tools (L&TT) to get the proper firmware. Download this software and the corresponding user's guide on the Web from http://www.hp.com/support/tapetools.

To upgrade the firmware:

1. If there are disks in any of the drives, use the control panel to remove them.

2. Record the customer's default configurations so that the jukebox can be correctly restored, if necessary.

   Go to the `CONF*` menu on the control panel to access and display the current jukebox configurations.

⚠ **Caution:** Do not switch off power to the jukebox until you are sure the SCSI bus is inactive. Switching off the jukebox when the SCSI bus is active can cause data loss and/or indeterminate bus states.

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3. If the host computer does not have HP StorageWorks Library and Tape Tools (L&TT), you will need to connect to a laptop that does have L&TT to update the jukebox firmware. To do so, perform the following tasks:

   a. Power off the jukebox.

   b. Ensure that your host computer is also powered off and disconnect it from the jukebox.

   c. Remove any cable connections to the single-ended ports on the interface module.

   d. Connect a SCSI cable between your laptop computer and the 50-pin single-ended SCSI ports on the SCSI interface PCA.

   e. Power on the laptop computer and the jukebox.

4. Follow the HP StorageWorks L&TT instructions to download the UDO jukebox firmware.

   ■ Download firmware for an AA965A for a UDO-only conversion.

   ■ Download firmware for an AA968A for a mixed-media conversion.

Note: This requires an override because the UDO firmware does not match the hardware ID string, which is still MO technology. Set `CONFIG 40` to `ON` from the jukebox Operator Control Panel (OCP). Also, the jukebox display will likely show DEVICE FAILED. Again, this is because the MO hardware is still in place.
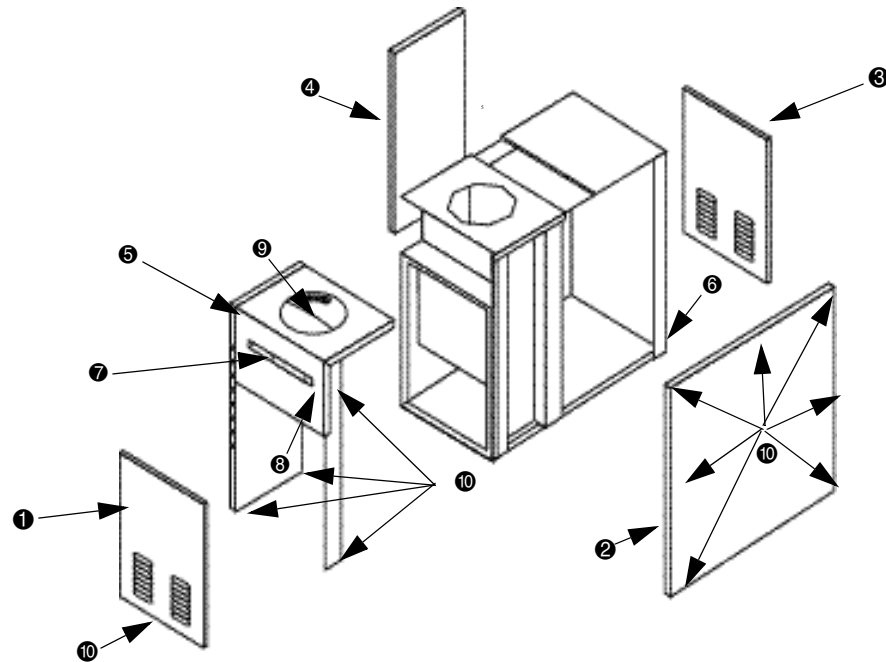
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5. Wait until the jukebox status is `READY` or `DEVICE FAILED` or `FIRMWARE MISMATCH` after the download.

6. Power off the jukebox.

7. Disconnect the laptop computer.

Accessing inside the jukebox

Note: For steps 1 - 9, refer to Figure 1, below.

To access inside the jukebox:

1. Remove the back access panel by lifting and pulling the access panel from the unit.

❶	Front access panel	❻	Power cord exits the jukebox
❷	Right side access panel	❼	Mailslot
❸	Back access panel	❽	Power switch
❹	Left side access panel	❾	Control panel
❺	Left and top access panel	❿	Screws

Figure 1: Jukebox access panels and other important features

2. Unplug the power cord from the back of the jukebox.

3. Remove the front access panel by removing the T-20 combination slotted/Torx screw on the bottom of the panel and lifting the panel from the unit.

4. Remove the right side access panel by removing the 7 T-20 combination slotted/Torx screws, then lifting the panel from the unit.

5. Unplug the power switch cable.

❶	Control panel cable plate	❸	Power switch cable
❷	Front panel cable		
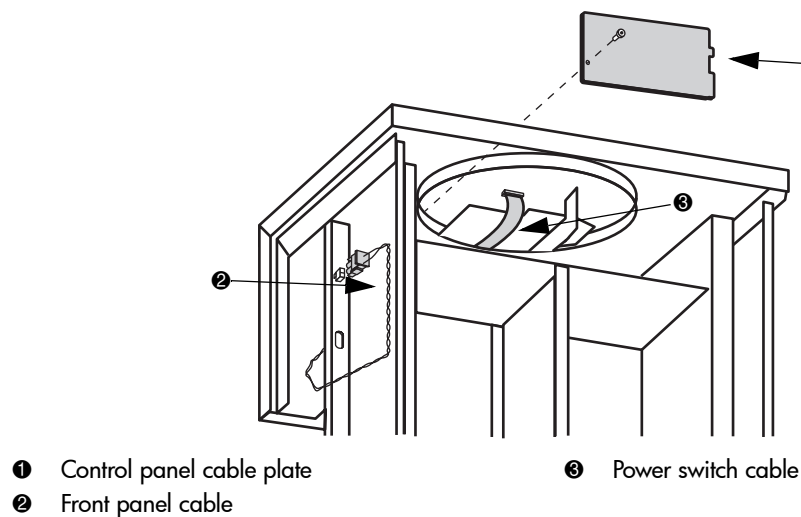
Figure 2: Power switch cable and front panel cable

6. Remove the control panel cable plate.

7. Unplug the front panel cable, which is located behind the control panel cable plate.

8. Rotate the front panel display so that you can read the display from the left side of the jukebox.

9. Remove the left and top access panel assembly by removing the 4 T-20 combination slotted/Torx screws—2 on the right side of the top access panel, 2 at the bottom of the left side of the panel—then pulling the panel from the unit.

Note: The left and top access panel may catch at its back left corner (as you face the front of the jukebox). To clear the catch point, pull outward on the top and left sides of the access panel, then lift the access panel up (see Figure 3).
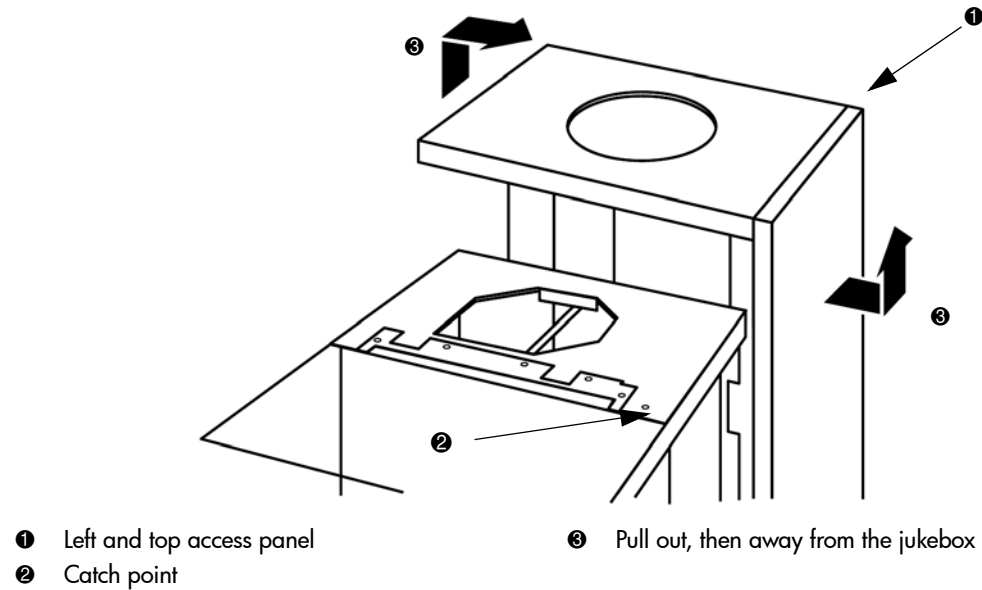

❶	Left and top access panel	❸	Pull out, then away from the jukebox
❷	Catch point		

Figure 3: Clearing the catch point to remove left and top access panel

Removing the existing drives

⚠ **Caution:** Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure you are properly grounded when touching static-sensitive components.

To remove the existing drives:

1. Remove the DC power cable, the SCSI cable, the drive fan cable, and the drive interface cable for the existing drives from the interposer board.

2. Remove the (1 or 2) T-20 screws from the left side of each drive module.

3. Carefully slide the drive module out of the chassis.

Note: If you plan to retrofit and reinstall two 14x MO drives, set these assemblies aside for later use.

Removing the controller board

<table>
<tr><td>⚠</td><td>Caution: Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure you are properly grounded when touching static-sensitive components.</td></tr>
</table>

To remove the controller board:

1. Slowly raise the picker to the top of the jukebox manually.

2. Block the picker's downward movement by inserting a screwdriver into the hole at the back of the vertical motor gear box (see Figure 4).

Note: Figure 4 is a cutaway view of the jukebox from the left side. This side is not open, so you must reach in from the right side of the jukebox and locate the vertical motor gear box on your right. The front of the gear box, where you insert the screwdriver, faces away from you.
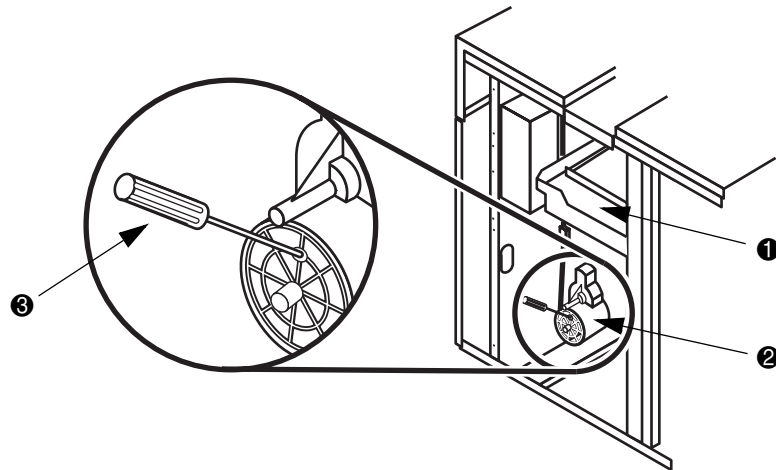
| ❶ | Picker | ❸ | Screwdriver |
| ❷ | Vertical motor gear box | | |

Figure 4: Block picker using a screwdriver

3. Remove the controller board cover held in place by 4 T-20 screws (see Figure 5).

❶ Controller board cover   ❸ Controller board
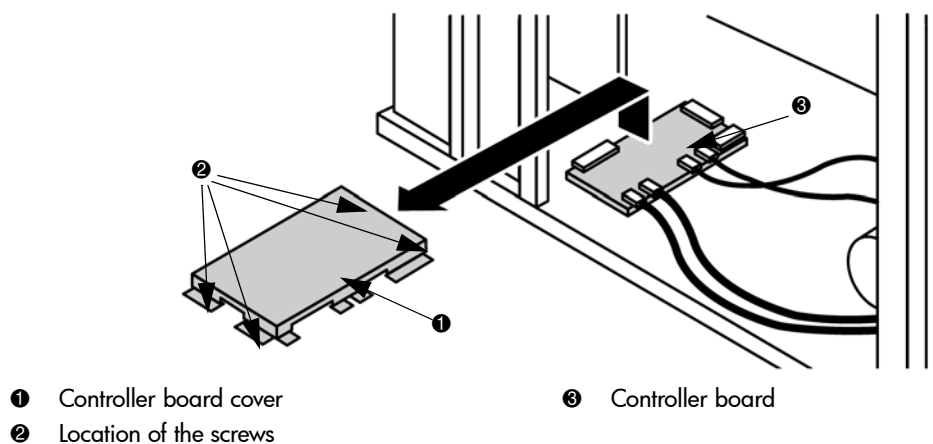❷ Location of the screws

Figure 5: Controller board cover

4. Disconnect all seven cables leading to the controller board.

5. Remove the 7 T-20 screws that secure the controller board to the jukebox, including the screw located in the heat sink (see Figure 6).

❶ Controller board   ❸ Locator pins
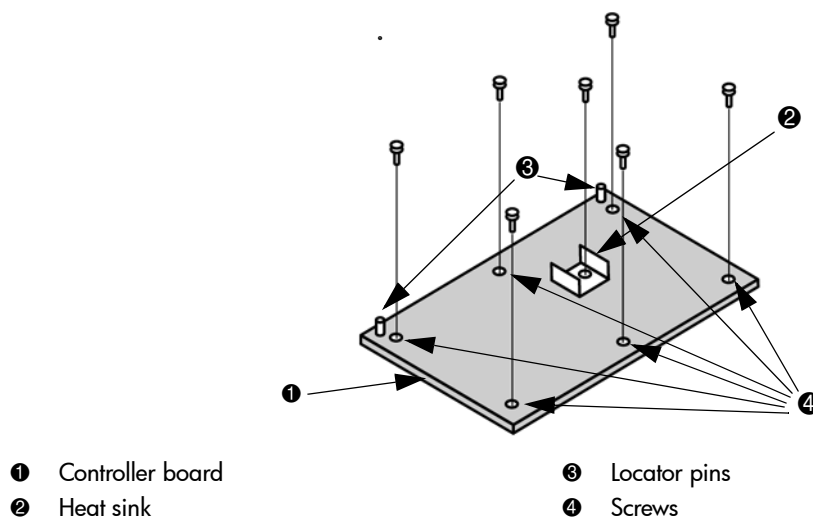❷ Heat sink   ❹ Screws

Figure 6: Controller board

6. Lift the controller board from the locator pins and remove it from the jukebox.

7. Set the board, cover, and all screws aside for reassembly.

Replacing the SCSI interface PCA with the new buffer board

To replace the SCSI interface PCA with the new buffer board:

1. Remove the SCSI interface PCA.

   a. From the back of the jukebox, remove all external cables and terminators from the SCSI interface PCA module.

   b. Remove the 4 screws securing the SCSI interface PCA module to the jukebox.

   c. Lift the module from the jukebox.

   d. Remove the cables from the SCSI interface PCA (see Figure 7) and from the power distribution card.
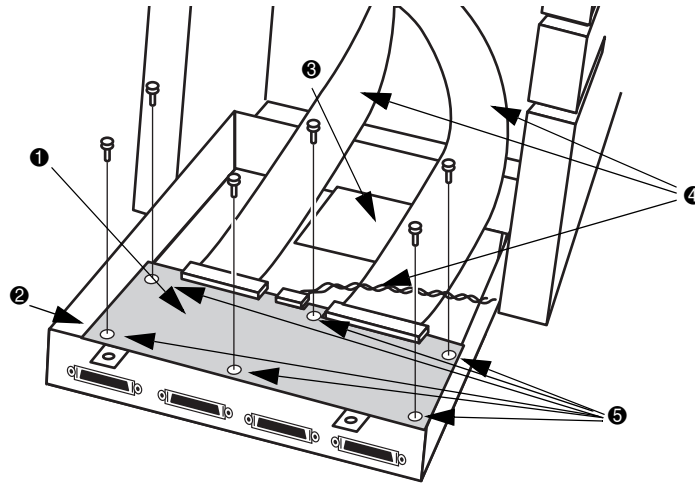
❶	SCSI interface PCA	❹	Cables
❷	SCSI interface PCA module	❺	Screws
❸	Power distribution card		

Figure 7: SCSI interface PCA

   e. Remove the 6 T-15 screws that secure the SCSI interface PCA to the module.

   f. Remove the SCSI interface PCA from the module.

2. Install the new buffer board.

   a. Place the buffer board where the SCSI interface PCA was located previously (see Figure 8).

Note: The buffer board is narrower than the SCSI interface PCD. Align the buffer board to the right side of the module as you face the module from the back of the jukebox so that the external connectors of the board align with the openings in the module.
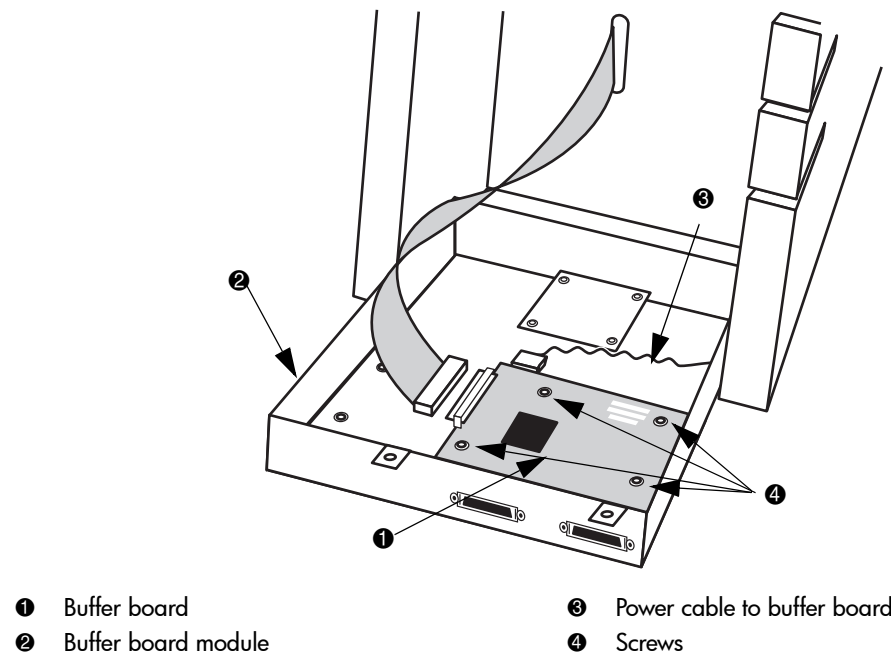
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❶	Buffer board	❸	Power cable to buffer board
❷	Buffer board module	❹	Screws

Figure 8: Buffer board

   b. Secure the buffer board with 4 of the screws that previously secured the SCSI interface PCA (see Figure 8).

   c. Discard all terminators (including the 68-pin terminators) from the obsolete SCSI interface PCA.

⚠ **WARNING:** Do not reuse the terminators (including the 68-pin terminators) from the LUN board. They are high-voltage differential (HVD); the new equipment can use only low-voltage differential (LVD) terminators or single-ended terminators.

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3. Connect the power cable to the buffer board (see Figure 8).

4. Add the new label to the LUN module to identify the ports on the buffer board.

5. Reconnect the cables previously disconnected from the power distribution card.

Note: There will be one cable left unconnected in the bundle of cables that connect to the power distribution card. It is a multi-colored wire with a 12-pin offset, black connector.

**Note:** Do not reattach the module to the jukebox frame yet.

Removing the ribbon cables and the interposer board

> ⚠ **Caution:** Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure you are properly grounded when touching static-sensitive components.

To remove the ribbon cables and the interposer board:

1. Open the two large plastic cable clamps on the bottom and back of the frame (see Figure 9).

2. Remove the GPIO cable and SCSI cable that run through the jukebox and connect to the interposer board. As you do so, remove the cable restraint straps and cable clips along the length of the cables.
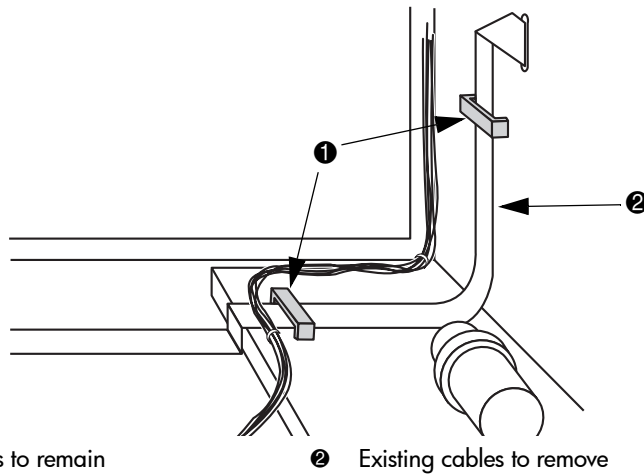

❶   Plastic cable clamps to remain   ❷   Existing cables to remove

Figure 9: Cable clips on jukebox frame

3. Disconnect the GPIO and SCSI cables from the interposer board.

4. If the jukebox has a configuration module, remove it from the interposer board and set it aside for later use. Remove all other cables from the interposer board.

5. Remove the 8 T-20 screws that secure the interposer board to the jukebox (see Figure 10).
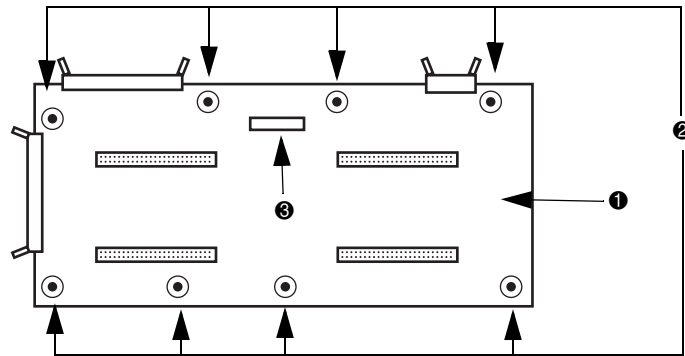
| ❶ | Interposer board (existing) | ❸ | Configuration module location |
| ❷ | Screws | | |

Figure 10: Existing interposer board

6. Remove the interposer board from the jukebox.

7. Remove any remaining ferrites and clips from the GPIO and SCSI cables. These include any on the outside of the jukebox frame.

8. Remove from the jukebox and discard the GPIO and SCSI cables.

Installing the new ribbon cables

This phase of the conversion process must be done in the following order, so that the new cables can reach the proper ports on the new interposer board.

1. Route the orange and white 68-pin SCSI cable.

2. Route the 50-pin general purpose input-output (GPIO) cable.

3. Route the 50-pin single-ended SCSI cable.

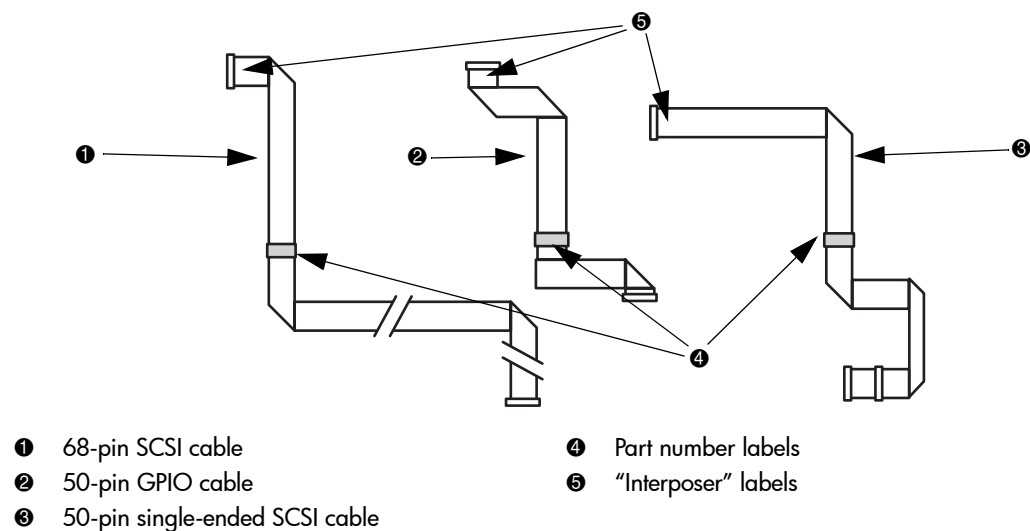The location of the part number labels on each cable is shown in Figure 11.

❶	68-pin SCSI cable	❹	Part number labels
❷	50-pin GPIO cable	❺	"Interposer" labels
❸	50-pin single-ended SCSI cable		

Figure 11: Labels on new ribbon cables

Routing the 68-pin SCSI cable

Note: It is critical to do the following steps in order to ensure successful installation.

To route the 68-pin SCSI cable:

1. From the front of the jukebox, locate the lower horizontal slot for the ribbon cables on the left side of the jukebox (see Figure 12).
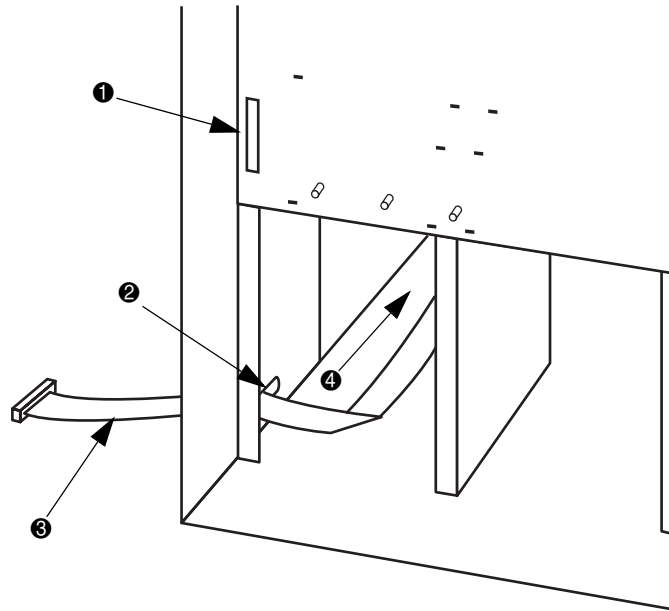
❶	Upper (vertical) slot for ribbon cables	❸	Ribbon cable extending from the jukebox
❷	Lower (horizontal) slot for ribbon cables	❹	Empty drive bay leading to inside the jukebox

Figure 12: Slots in jukebox frame front for ribbon cables

2. Locate the end of the 68-pin SCSI cable labeled "Interposer" and position it with the label to your left and facing up.

3. Starting from inside the jukebox, thread the "Interposer" end of the 68-pin SCSI cable out through the lower horizontal slot. Pull it through until the fold labeled "this side up" is just inside the jukebox, to the right of the lower horizontal slot.

4. Leave the cable now extending from the left side of the jukebox laying on the floor.

Note: The "Interposer" label and "This side up" label should both be facing up. If they are not, remove the cable and route it again.

5. Route the other end of the 68-pin SCSI cable through the empty drive bay at the bottom of the frame toward the back of the jukebox, along the frame floor (see Figure 13).

   The SCSI cable will pass under the bundle of multi-colored cables, and continue to the back of the frame.

6. Secure the cable to the back inside of the frame by routing it through the 2 plastic cable clamps attached to the frame. Close the clamps once the cable is positioned properly.
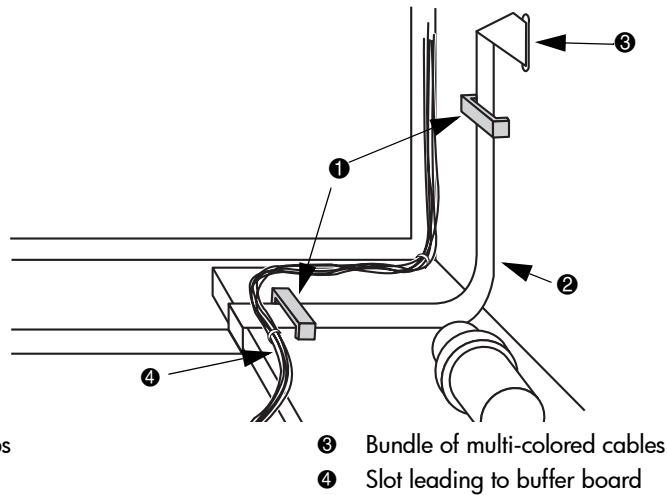

| ❶ | Plastic cable clamps | ❸ | Bundle of multi-colored cables |
| ❷ | 68-pin SCSI cable | ❹ | Slot leading to buffer board |

Figure 13: Route for the 68-pin SCSI cable

7. Pass the cable through the slot in the frame and to the buffer board. Feed all slack in the cable through this hole.

8. Connect the cable to the buffer board (see Figure 14).

9. Loosely fold the slack in the cable so that it remains in the buffer board module.
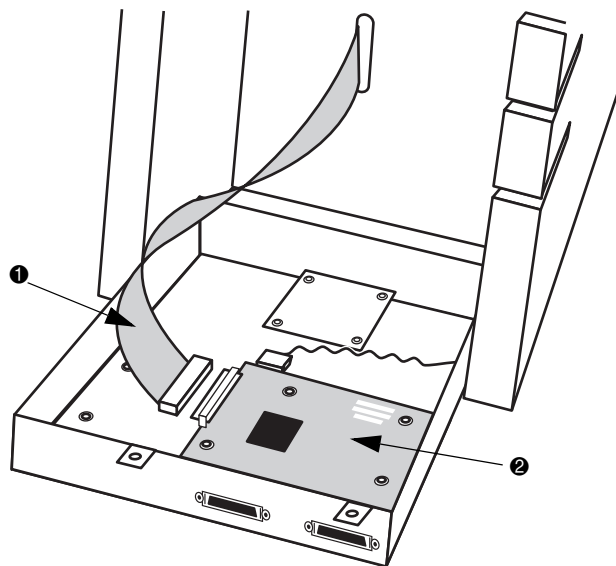
| ❶ | 68-pin SCSI cable | ❷ | Buffer board |

Figure 14: 68-pin SCSI cable connected to the buffer board

10. Close the buffer board module and secure it with the existing screws.

Routing the GPIO cable

To route the GPIO cable:

1. From the front of the jukebox, locate the lower horizontal slot for the ribbon cables on the left side of the jukebox (see Figure 12).

2. Locate the end of the 50-pin GPIO cable labeled "Interposer" and position it with the label to your left and facing up.

3. Starting from inside the jukebox, thread the "Interposer" end of the 50-pin GPIO cable out through the lower horizontal slot. Pull it through until the fold labeled "this side up" is just inside the jukebox, to the right of the lower horizontal slot.

4. Leave the cable now extending from the left side of the jukebox laying flat on top of the 68-pin SCSI cable.

Note: The "This side up" label should be facing up. If it is not, remove the cable and route it again.

5. Route the other end of the GPIO cable through the empty drive bay at the bottom of the frame and along the frame floor to the controller board location.

Routing the single-ended SCSI cable

To route the single-ended SCSI cable:

1. From the front of the jukebox, locate the lower horizontal slot for the ribbon cables on the left side of the jukebox (see Figure 12).

2. Locate the end of the 50-pin single-ended SCSI cable labeled "Interposer" and position it with that label to your left and facing up.

3. Starting from inside the jukebox, thread the "Interposer" end of the 50-pin single-ended SCSI cable (facing out) out through the lower horizontal slot. Pull it through until the fold labeled "this side up" is just inside the jukebox, to the right of the lower horizontal slot.

4. Leave the cable now extending from the left side of the jukebox laying flat on top of the 50-pin GPIO cable.

5. Route the other end of the cable through the empty drive bay at the bottom of the frame and along the frame floor toward the back of the frame.

6. The pre-existing folds in the cable lead the cable to the right, then to the right again. The terminated end of the cable leads toward the front of the jukebox (see Figure 15).
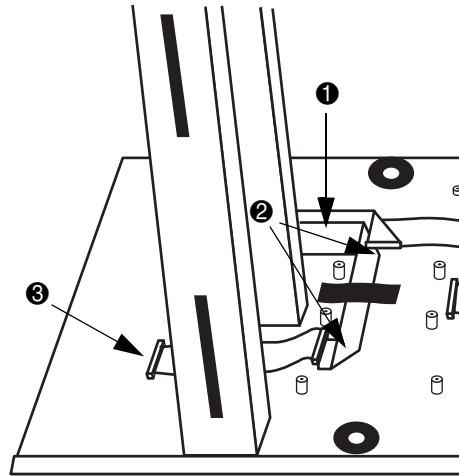
❶	Single-ended SCSI cable coming from the interposer board	❷	Folds in the single-ended SCSI cable
		❸	Terminated end of single-ended SCSI cable

Figure 15: Route for single-ended SCSI cable

7. Clean the chassis where the tape will go (see Figure 15).

8. Ensure that the cable is not on top of any screw holes and secure the cable to the floor of the jukebox using the large, black tape strip provided (see Figure 15).
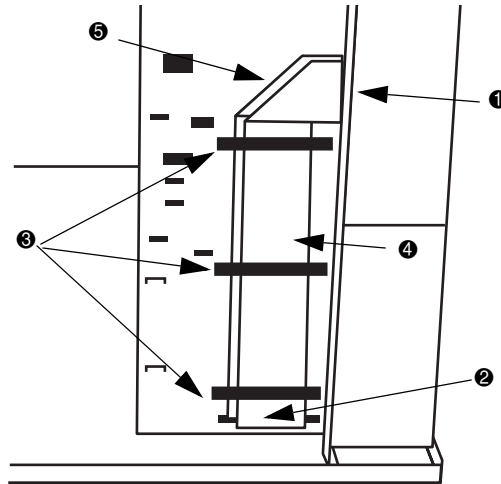
Finishing routing the new ribbon cables

To finish routing the new ribbon cables:

1. Clean the left side of the jukebox frame between the upper (vertical) slot and the lower (horizontal) slot.

2. Thread the new ribbon cables up and through the upper (vertical) slot (see Figure 16) in the following order, making sure to fold the ribbon so that it lays flat against the jukebox frame:

    a. Single-ended SCSI cable

    b. GPIO cable

    c. 68-pin SCSI ribbon cable

⚠ **Caution:** The edges of the upper slot are sharp. Be careful not to cut yourself or the cables.

❶ Upper (vertical) slot for ribbon cables
❷ Lower (horizontal) slot for ribbon cables
❸ Plastic cable clamps
❹ Ribbon cables
❺ Ribbon cable fold (align all three here)

Figure 16: Finish routing the cables

3. The appropriate folds are already in the cables. Ensure that the folds in all three cables are lined up even with each other. This will give you the proper length of each cable to connect to the new interposer board.

4. Using three plastic cable clamps, provided, secure the cables to the left side of the jukebox frame, as shown in Figure 16.

Note: Securing the cables as shown in Figure 16 ensures that regulatory certifications are maintained.

Installing the new interposer board

To install the new interposer board:

1. Position the three ribbon cables (coming back into the frame through the upper slot) with respect to the new interposer board. The GPIO and single-ended SCSI cable will be behind the interposer board (see Figure 17 for cable locations); the 68-pin SCSI cable will not.
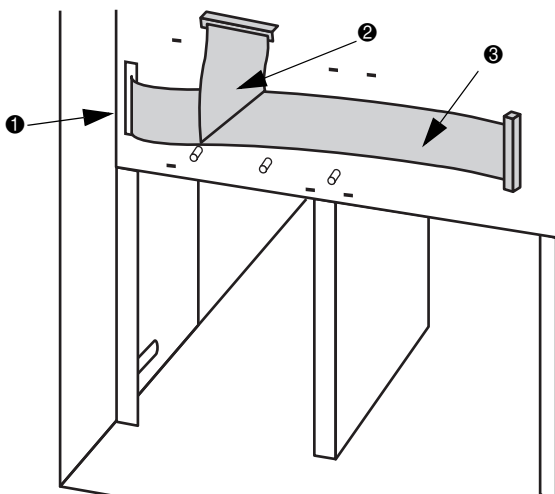
❶   68 -pin SCSI cable   ❸   50-pin single-ended SCSI cable

❷   50-pin GPIO cable

Figure 17: Cables routed to new interposer board

2. Attach the 68-pin SCI cable to the interposer board.

3. Attach the GPIO cable and single-ended SCSI cable to the new interposer board (see Figure 18).

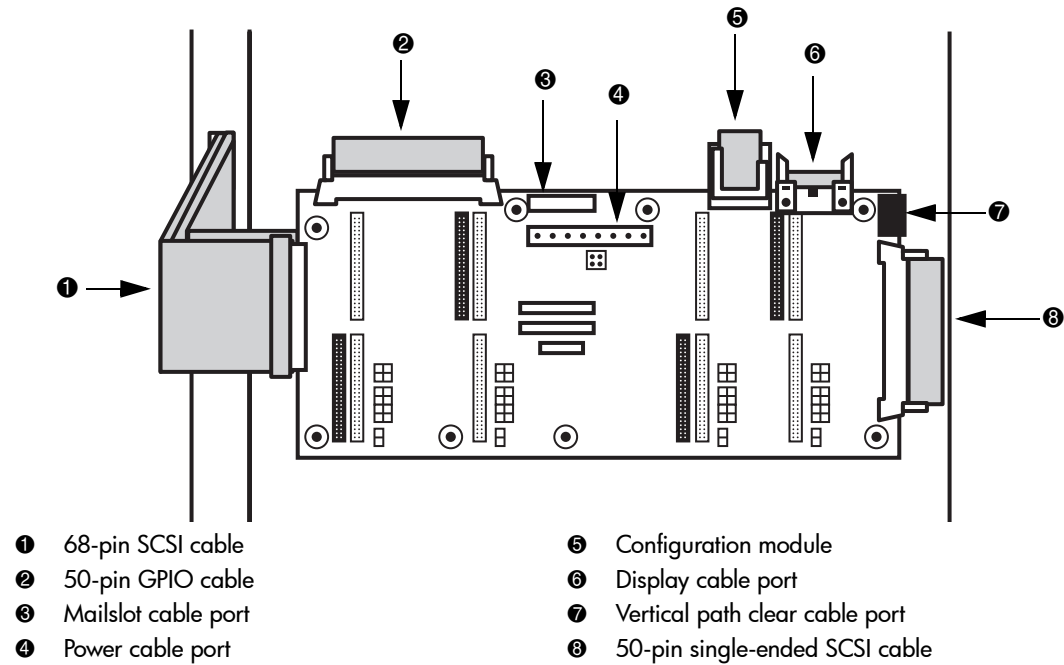|			
❶	68-pin SCSI cable	❺	Configuration module
❷	50-pin GPIO cable	❻	Display cable port
❸	Mailslot cable port	❼	Vertical path clear cable port
❹	Power cable port	❽	50-pin single-ended SCSI cable

Figure 18: Cables attached to new interposer board

4. Secure the interposer board with the 8 screws that held the previous interposer board in place.

5. Connect the remaining cables (mailslot cable, power cable, display cable, vertical path clear cable) to the interposer board, just as they were connected to the previous interposer board.

6. If the jukebox had a configuration module, or if you are expanding the jukebox capacity, locate the configuration module (existing or new) and install it on the new interposer board (see Figure 18).

Replacing the controller board and cover

To replace the controller board and cover:

1. Place the controller board in its previous location, using the locator pins to ensure the correct placement of the board (see Figure 6, page 20).

2. Connect to the controller board the seven cables previously disconnected.

3. Secure the controller board to the jukebox frame using the 7 T-20 screws. Remember that one of the screw holes is located on the heat sink.

> △ **Caution:** Avoid screwing into or through the cables under the controller board as you are securing it to the frame.

4. Place the controller board cover in its previous location (see Figure 5). Be sure not to pinch any cables with the controller board cover.

5. Secure the cover to the frame using the 4 T-20 screws.

> △ **Caution:** Avoid screwing into or through the cables under the controller board cover as you are securing it to the frame. Also avoid pinching the cables with the controller board cover itself.

6. Clean the jukebox frame in the area of the terminator of the 50-pin single ended SCSI cable.

7. Expose the double-sided tape on the terminator of the 50-pin single ended SCSI cable and use the tape to attach the terminator to the jukebox frame.

Installing the drives

Follow the procedures in Installing 2 UDO drives. If the customer is building a mixed-media jukebox, also follow the procedures in Retrofitting and reinstalling MO drives after installing the UDO drives.

Installing 2 UDO drives

To install 2 UDO drives:

1. Affix the new drive identification and cabling label on the jukebox frame above the interposer board, covering the existing label (see Figure 19).

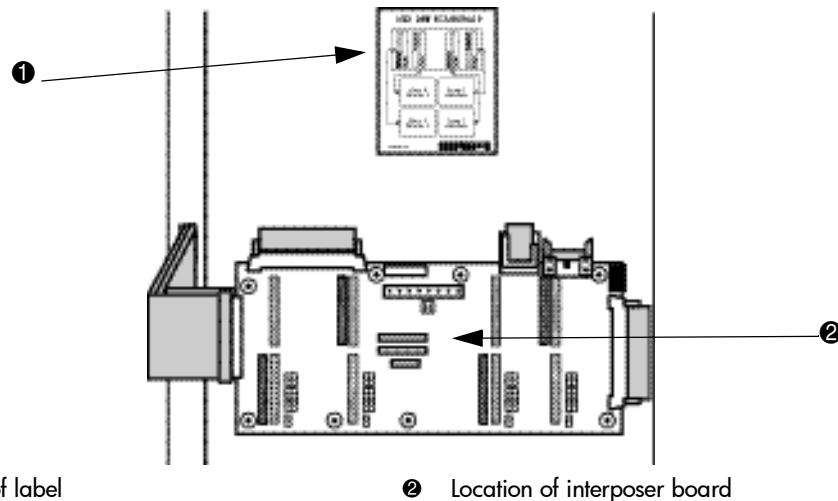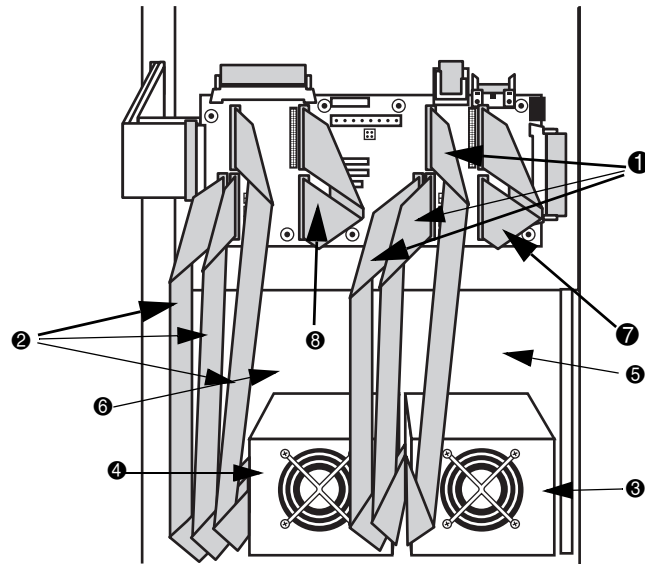❶ Location of label   ❷ Location of interposer board

Figure 19: Drive identification and cabling label

2. For each UDO drive you assemble, take an MO drive out of its drive module. You will re-use its drive module and its power cable for the UDO drive.

3. Assemble the UDO drives into drive modules. For each drive:

    a. Insert the drive into the drive module from the previous step.

    b. Connect the SCSI cables and the power cable to the drive and thread them through the holes in the module.

    c. Secure the drive to the module using four screws, supplied.

    d. Install and secure the cable access panel on the drive module.

Note: If there is a configuration module present, the unit must have either 4 drives, or 2 drives and 76 slots.

4.   Insert the 2 UDO drive assemblies into place at drive locations 1 and 2 (see the label or Figure 20).

❶	Cables for drive 1	❺	Drive location 3
❷	Cables for drive 2	❻	Drive location 4
❸	Drive 1	❼	Jumpers for drive 3
❹	Drive 2	❽	Jumper for drive 4

Figure 20: Connection of drive cables and jumpers to the interposer board

5.   Secure the UDO drives to the jukebox using 4 T-20 screws, 2 on each side of the drive.

6.   Connect the drive power cables to the jukebox.

7.   Connect the SCSI drive cables to the interposer board (see Figure 20).

8.   If these are the only two drives in the jukebox, connect the jumpers to the interposer board in the following manner (see Figure 20).

a.   Use a jumper to connect the ports for drive 4.

b.   Use a jumper to connect the ports for drive 3.

Retrofitting and reinstalling MO drives

If the customer is not building a mixed-media jukebox, do not follow the procedures in this section. Instead, continue with Testing the conversion, page 40.

If the customer is building a mixed-media jukebox, the MO drives must be retrofitted and reinstalled in the jukebox after it is converted for UDO and the UDO drives are installed.

Note: Only 14x MO drives can be upgraded and included in a mixed-media jukebox. 2x, 4x, and 8x MO drives are not supported in a mixed-media configuration.

The procedures to retrofit and reinstall 2 14x MO drives are as follows. For each drive:

1. Remove the ribbon cables from the MO drive.

2. Detach the 50-pin single-ended SCSI cable from the interposer board.

3. Attach the male end of the 50-pin SCSI drive cable to the end of the 50-pin single-ended SCSI cable (see Figure 21).
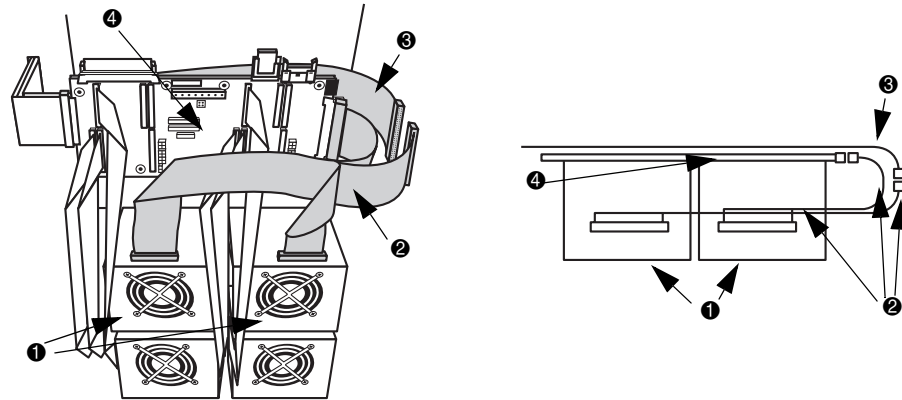
| ❶ | Retrofitted MO drives | ❸ | 50-pin single-ended SCSI cable |
| ❷ | 50-pin SCSI drive cable | ❹ | Interposer board |

Figure 21: Retrofitted MO drive cable connection

4. Attach the female end of the 50-pin SCSI drive cable to the interposer board.

5. Ensure that the power cable is still attached.

6. Attach the autochanger interface cable (smaller of the ribbon cables) to the drive.

7. Install the media detect station on drive 3:

    a. Mount the media detect station support (gray sheet metal) to the inside of the drive module using the 4 T-10 screws provided (see Figure 22).

    b. Slide the media detect station sleeve (black plastic) into the sheet metal support, and secure it using the T-15 screw, provided (see Figure 22).

> ⚠️ **Caution:** Ensure that the screw does not project into the surface of the plastic of the media detect station. Otherwise, it could damage the optical media and cause data loss.
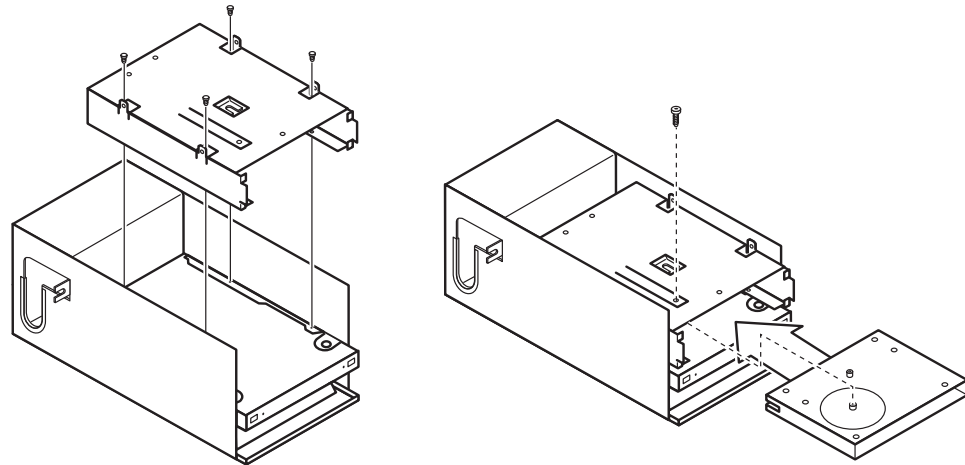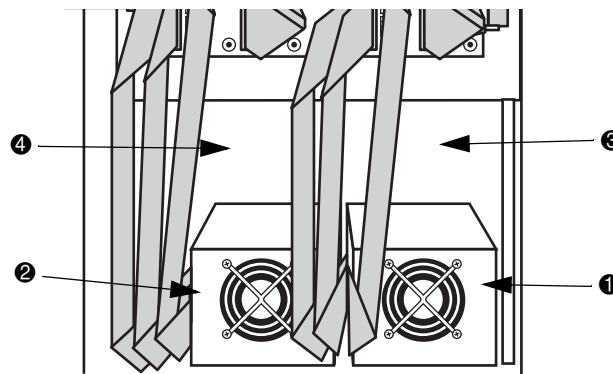

Figure 22: Installing the media detect station

8. Slide the MO drives part way into place, ensuring that the drive with the media detect station goes in drive location 3, and the other retrofitted MO drive goes in drive location 4 (see Figure 23).

❶	Drive location 1	❸	Drive location 3
❷	Drive location 2	❹	Drive location 4

Figure 23: Drive locations

9. Attach the 50-pin SCSI drive cable to the MO drives, where the previous SCSI cables had been attached (see Figure 20, page 36).

10. Secure the MO drives to the jukebox using 2 T-20 screws on both sides of each drive.

11. Connect the SCSI drive cables to the interposer board.

Completing the Conversion

3

Overview

To complete the conversion process, perform the following tasks:

- Testing the conversion, page 40
- Finishing the firmware upgrade, page 41
- Labeling the jukebox, page 43

Testing the conversion

To test the conversion:

1. Remove the screwdriver securing the picker.

2. Replace the right side access panel.

3. Replace the left and top access panel on the jukebox.

4. Reconnect the power switch cable and the front panel cable.

5. Connect the jukebox to power.

6. Power on the jukebox by setting the power switch to the on position.

7. Verify that the display comes on. It may still read DEVICE FAILED, but that is acceptable at this point. If the display does not come on, check the cabling.

8. Secure the left and top access panel to the jukebox.

9. Rotate the control panel display so that the display is best seen from the front of the jukebox.

10. Reattach and secure all other access panels.

11. Connect the jukebox to power and power it on.

Finishing the firmware upgrade

To finish the firmware upgrade:

1. Power on the jukebox, if necessary, and wait for the power on sequence to complete.

   The front panel displays the jukebox status. It should display READY, but may still display DEVICE FAILED.

2. Select ADMIN* > CONF* on the control panel, then use the NEXT key until you see RESTORE DEFAULTS in the display.

3. Press ENTER to select RESTORE DEFAULTS, then wait until WAIT FOR UPDATE is no longer shown.

4. Connect to a host running L&TT, if necessary.

   a. Power off the jukebox.

   b. Connect to the jukebox the computer which hosts L&TT.

   c. Power on the jukebox.

Note: READY should display once the jukebox has completed its power on procedure. If DEVICE FAILED displays instead, check to be certain that the hardware is correctly installed and repeat these procedures until READY displays.

5. Power off and on the jukebox (you must do this a second time even if you performed the previous step).

6. When the jukebox displays READY, run L&TT to ensure that the jukebox and all drives are found.

Note: If L&TT does not recognize all of the drives, check that the cabling is installed correctly and repeat these procedures until all drives are found.

7. If necessary, upgrade the firmware for all of the drives using L&TT.

8. The jukebox firmware should already be up-to-date. If it is not, update it now.

Note: If you did not download the UDO jukebox firmware first, you may have to disconnect all drives, download jukebox firmware, connect drives, and download drive firmware again.

9. Verify proper jukebox operation:

   a. Check for proper drive operation by running a "random write and verify" for approximately 2 minutes.

   b. Using a new disk or a re-writable with unneeded data, check for proper jukebox operation by running the "wellness test."

10. Enter any customer configurations that are different from the default using the CONF* menu.

11. If the jukebox was connected to a laptop to run L&TT, reconnect it to its usual controller.

    a. Power off the jukebox.

    b. Power off the computer running L&TT and disconnect it from the jukebox.

    c. Reconnect the host computer to the jukebox.

    d. Power on the jukebox, then wait until the jukebox shows READY in the display.

    e. Power on your host computer.

Note: If a failure occurs, refer to the troubleshooting section in the *HP StorageWorks 1000ux/1900ux/2300ux Optical Jukebox Service Manual.*

Labeling the jukebox

To update the product nameplate and upgrade label:

1. Use Table 5 to select the correct nameplate and product label.

Table 5: Select product label

Jukebox characteristics	Nameplate	Label
No configuration module	Model No. 1000ux	"Product has been upgraded to AA965A"
4 UDO drives	Model No. 1900ux	"Product has been upgraded to AA966A"
2 UDO drives	Model No. 2300ux	"Product has been upgraded to AA967A"
2 UDO and 2 MO drives	Model No. 1900ux	"Product has been upgraded to AA968A"

2. Place the product label partially over the existing product label, making sure the serial number above the buffer board module remains uncovered.

3. Place the new product nameplate on the top of the jukebox, covering the existing nameplate.

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